FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE MEETING
October 13, 2005
Richland, WA

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This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Welcome and Introductions

Rick Jansons, Tank Waste Committee (TWC) Chair, welcomed the committee and introductions were made. Changes were incorporated into the August meeting summary, and the summary was adopted.

Tank Integrity Program & Integrity Assessments

Dana Bryson, Department of Energy – Office of River Protection (DOE-ORP), presented the committee with information on the Tank Integrity Program. The program involves an independent expert review, including an expert panel on tank chemistry and independent engineers to evaluate tank integrity. He stated that the Tank Integrity Program protects the double-shelled tanks (DSTs) from corrosion, maintains tank waste chemistry and adequate tank ventilation, and conducts visual and ultrasonic inspections of DSTs. He said the results from the first round of inspections indicated the tanks are safe and there is no plate thinning, cracks, or welling. The Department of Energy (DOE) is commencing the second round of DST inspections, which will provide more accurate corrosion rate information and monitoring. Waste retrieval activities from single-shelled tanks (SSTs) are planned and budgeted through 2009. Future waste retrievals are planned based on updated information, which comes in constantly from the tank inspection program.

Zack Smith, DOE-ORP and Assistant Manager of the tank farms, explained that each tank goes through Ultrasonic Testing (UT) analysis every seven to ten years. Recently that schedule has increased to every five to seven years, in order to get good data to show corrosion is not occurring. He said DOE has robust information and data on tank chemistry, and a more robust set of parameters are being used to ensure a more sophisticated evaluation of tank safety.

Regulator Perspectives

- Jeff Lyon, Washington State Department of Ecology (Ecology), said the Tank Integrity Program is one of the better programs where DOE and Ecology work well together.
- Jeff said the Tank Integrity Assessment is due in March of 2006, and Ecology has had an opportunity to provide input into the process and the development of the document. He said he could come to a future committee meeting, to brief the committee on the assessment once it is released.
- Jeff said the tank integrity assessments will provide a good picture of the life of the DSTs and what condition they are in. He said that until the report comes out, accurate estimates of the life of the tanks remains uncertain.

Committee Discussion

- *Dirk Dunning asked whether the PH probes used in the tanks have changed how PH is measured during the last decade?* Dana said a number of compound concentrations are monitored, and hydroxide is no longer used as a PH measurement.
- *Dirk asked what caused corrosion in Tank 102?* Dana said a pit above the tank had an unused waterline that caused the corrosion. This particular circumstance caused DOE to remove unused waterlines in the tank farms. He said the tanks require annulus ventilation to maintain a dry atmosphere and to minimize corrosion.
- *Dirk asked whether DOE is going through UT analysis on all DSTs?* Dana said the first round of UT analysis is finished, and the second round is being conducted now. The results from these analyses are exciting. The first round analysis provided a baseline, while the second round analysis will indicate any changes that have occurred. He added that the corrosion rate is known to be next to nothing with the monitoring program in place, which ensures a safe operating environment.
- Al Boldt expressed concern about tank corrosion. He indicated that air and liquid corrosion is one of the areas with the highest rates of corrosion in SSTs, which is where he would expect to find corrosion in the DSTs. Dana agreed with Al, indicating those are the areas where pitting has occurred. DOE is evaluating the potential causes of pitting, which is why it is good to have baseline data from the initial tank integrity inspections to work from.
- Al expressed concern about tanks that were operated outside the caustic limit. He said caustic levels decline constantly, but he is unaware of a program that addresses the caustic limit. Dana said there were several tanks operating above the caustic

limit. He said the caustic limit was an operational limit. DOE made the decision to maintain the caustic limit, which has been incorporated into the safety basis as a TRC level control. He said DOE has adjusted the supernate to be within the limits, and he mentioned that several tanks have been progressing nicely to come back within caustic limits. Some tanks have a pump to mix sludge, since the natural rate of mixture is too slow to reduce caustic levels.

- *Dick Smith asked how far under the tanks inspections are able to go?* Dana said DOE is working on developing equipment to inspect further under the bottom of tanks. During some of these efforts, some concrete has spilled off into the passageways, which caused risk to the inspection equipment. He indicated that DOE does not anticipate the conditions on the bottom of the tank to be different than conditions on the lower wall of the tank.
- *Dirk asked whether any work has been done to look at making tanks inert using nitrogen?* Dana said the use of nitrogen has been evaluated and considered. There have also been suggestions to add ammonia to the tanks. He explained that the safety basis for the tanks requires a large amount of air moving through the tanks to avoid a build-up of flammable gases in the tanks. Therefore, pushing oxygen out of the tanks to make them inert is not something DOE is in a position to consider at this time.
- *Dirk asked whether there has been any discussion of constructing new tanks to provide additional storage capacity?* Dana said the capacity of existing tanks is enough to accommodate existing waste. DOE does not anticipate pursuing the building of new tanks. With the slow down of several cleanup projects and the cost over-runs occurring at Hanford, Paige Knight expressed her surprise that constructing additional tanks for storage capacity is not being discussed. Dana said DOE is working on supplemental technologies to address the need for additional treatment and storage capacity.
- *Paige asked how much space is left in the tanks?* Dana said there is four million gallons of space left in the tanks, which is the projection for 2009. He said 1.2 million gallons need to remain open under Resource Conservation and Recovery Act (RCRA) regulations for emergency tank volume, and 1.5 million gallons are needed for evaporator operational space to allow for continued retrieval. This leaves about 1.5 million gallons of space available for additional waste storage.
- *Al said he has heard about a four-year delay in the construction of the Waste Treatment Plant (WTP). He said DOE has alluded to bulk vitrification to solve the waste disposal problem. Supposing construction of the WTP is delayed until 2011, if more tanks are not built (a tank takes seven years to build) to provide additional storage, Al believes there will be a serious waste storage and retrieval problem. He asked if these timing issues have been examined?* Dana said DOE has a good program in place for tank waste retrieval until 2009; however, he said programs over the next couple of years need to take such timing issues into account. He said DOE is looking at different options to increase tank capacity, including increasing useable space, fill level, and specific gravity.
- *Rick commented that DOE has budgeted for waste storage capacity in the DSTs through 2009, but there are additional delays of waste treatment and storage projects*

until at least 2015. If the bulk vitrification technology is determined to be a viable means of treating waste, then there will likely not be a need for building additional tanks. Regardless, there are significant concerns that having adequate tank storage through 2009 does not cover the likely interim delay period between 2009 and 2015, or whenever the WTP comes online. With decreases in funding for cleanup projects, he asked if money is being spent effectively and appropriately? Moses said there are TPA milestones that detail which tanks are going to be retrieved beyond 2009. He said DOE needs to discuss with the state what happens when the tanks are at full capacity.

- *Rick said eventually all tanks fail. For this reason, he asked whether the DSTs are in good enough condition to accommodate waste through 2015 or 2020 in the event of delays in the completion of the WTP? In addition, he asked if tank integrity evaluations are done frequently enough?* Dana said DOE conducts integrity assessments on about four tanks per year.
- Rick suggested that the main concern for the Board is to determine where the volume of retrieved waste is going to go depending on what happens with the WTP and other supplemental technologies. Dana said DOE does not want to engage in planning beyond 2009 until it can coordinate with the regulator agencies on the issue. Rick stated that the Board has made an effort to be proactive with its advice, and would like to have an opportunity to provide input into the discussion, rather than comment on end product.
- Al commented that the Board has recently talked a lot about prioritizing funding for Hanford cleanup projects. DOE needs to be looking at alternatives if the funding for waste retrieval from the SSTs is shifted to other activities, resulting in concerns about tank integrity and safety. Dana said the current program will keep tanks safe.
- The committee discussed issues and concerns regarding timing related to the amount of available storage volume in the tanks.

Performance Assessments (PA)

Moses Jaraysi, DOE-ORP, presented information on the definition, application, and drivers of PAs to the committee. Moses explained that PAs are risk assessments with more detailed analysis, and they satisfy the state requirement for conducting a risk assessment. At Hanford, PAs serve as foundations of information. Whenever new information is available, DOE has to revise the appropriate PA based on the new information. All Hanford risk assessments interact with the Site-Wide Risk Assessment Composite Analysis. PAs are also folded into the composite analysis under DOE order. PAs do not have requirements for public involvement as risk assessments do; however, DOE has initiated one-on-one stakeholder meetings to discuss the SST PA, and allowed them to provide their input and concerns directly to DOE. PAs are iterative documents, so as they are developed, DOE offers to meet with anyone interested in discussing their contents.

Currently, the SST PA and the Integrated Disposal Facility (IDF) PA are the two PAs being developed. Chapters of these PAs are available to interested parties. The first PA is scheduled to be issued in 2006. PAs involve analyzing a program or system to identify the most reasonable case for system performance, and then vary the parameters to model and evaluate risk. For example, for the SST PA conceptual model, three areas were identified that were expected to drive long-term impacts: 1) groundwater pathway; 2) air pathway; and 3) inadvertent intruder pathway. The SST and IDF PAs have similar pathways and data where possible, to provide as consistent a picture of the conditions as possible.

When a PA is issued for review, Moses said he would plan to bring the results to the committee, perhaps in a workshop format.

Regulator Perspectives

- Jeff Lyons said risk is used in considerations of closure actions and cleanup activities. Risk scenarios are applied to all Waste Management Area (WMA) sites. Model Toxics Control Act (MTCA) standards are used to evaluate whether it has met those requirements. Jeff described Ecology's risk goals for the WMA sites.
- Jeff said PAs sound simple, but involve multiple variables and assumptions and the modeling of various scenarios, which all have important impacts on the results. When the PA is released, Ecology will review how DOE developed their assumptions and what models were used.
- Jeff said he has only seen drafts of the initial chapters of the SST PA, so he is not real familiar with it. The PA will be used to evaluate commingled waste sites, as well as the Tank Closure Environmental Impact Statement (EIS).

Committee Discussion

- *Wade said there is evidence of various sets of cribs and trenches related to certain tanks. How is DOE taking these relationships into consideration?* Moses said related cribs and trenches are taken into consideration in the composite analysis and the tank closure EIS. He said PAs have to consider the integration of possible impacts, such as those between cribs and trenches and tanks.
- Al commented that the EISs generated by the Department of Energy – Headquarters (DOE-HQ) are being left out of the committee's discussion. He said there seems to be confusion among Board members about the difference between risk assessments, PAs, and EISs. He said it seems PAs are used because they supercede other documents, like EISs. He said Ecology is supposed to review and approve an EIS, but they are also using PAs in project assessment, which are a different type of assessment document. *He asked how Ecology addresses the discrepancy arising from an EIS saying one thing, and a PA saying something different?* Jeff said PAs and EISs should both have risk assessments. When a closure plan is released, it has to go out for public comment. He said an EIS has a different function, which meets SEPA

requirements. He emphasized that the development of both documents are public processes.

- Al commented that the public does not have the opportunity to review and comment on the alternatives in a PA as they do in an EIS. Therefore, he said members of the public have no way of evaluating a PA without educating themselves by digging through mountains of information. Jeff said Ecology would compare the results of an EIS with the assumptions made by DOE in a PA. He emphasized that DOE delivers PAs to inform decisions made about work projects. Moses explained that the typical sequence of events involves developing an EIS, which evaluates a number of alternatives, selecting a preferred alternative issued in the record of decision (ROD), then developing a PA based on the selected preferred alternative which is analyzed in further detail by running models with the same assumptions. So, an EIS should come before a PA. The problem in this case is that the EIS has been delayed, so the preferred alternative is unavailable for analysis in a PA. In the meantime, a PA is required to move forward with other activities, so DOE has developed a PA assuming the preferred alternative that will be chosen in EIS once it is issued. When the EIS is released, the PA has to change to reflect the preferred alternative in the EIS. He emphasized that a PA does not make a decision, so DOE coming out with a PA now, does not mean they have ignored the EIS, but instead reflects the need for a PA to develop tools to move forward with project planning.
- Al indicated his main concern is that he has been told that the same assumptions are used in an EIS and a PA, which is apparently not the case. Moses acknowledged that EIS assumptions need to be more conservative, while PA assumptions tend to be more detailed.
- Dirk said that he believes the assumptions being used in the EIS are too restrictive and not conservative enough. Al agreed, saying he found smaller inputs and more restrictive assumptions were being used in the EIS. Fred Mann, CH2M Hill (CHG), said a PA is a more bounding analysis. Moses said Ecology is the regulating agency that will approve tank closure. He said Ecology sees all the analysis done in the EIS and the PA, and will be making the decision to approve the document.
- Paige Knight, said that the document development process being out of sequence seems to be the source of confusion. Moses reiterated that the development of the PA before the EIS is issued is atypical.
- Dirk recommended having an informational session on the assessment document development process for Board members, to educate the Board on the sequence of documents. In addition, a good diagram of the various decision-making documents would be useful.
- Dirk said the conceptual flow model is known to be wrong and disconnected with reality. So, risk assessments based on assumptions instead of reality cause the analysis and results to be useless. *He said there are multiple risk assessments, and asked if there is certainty that everything is covered, there is no overlap, and the document sequencing process is working?*

- Paige expressed the need to have the sequence of decision-making documents clarified. She said she is concerned she does not see anything about cumulative impacts. Moses said a composite analysis is supposed to come up with cumulative impacts.
- Paige commented that she cannot believe how sound conclusions can be made with so many disparate documents and information. She said she is concerned that all these documents are being produced but will not be used, resulting in wasted time and money. Moses said DOE is required to, and does, use all the documents.
- Jeff commented that there is a lot of information to consider and analyze. He hopes the PA and EIS incorporate as much available knowledge as DOE has on the topics, so the right decision can be made.
- Paige suggested potential flaws in the decision-making process need to be examined.
- Wade said it is clear the questions the Board continues to raise have an impact on the document development process and the approach DOE is taking. As a result, he believes DOE's attention is more focused, and there are drivers resulting directly from Board input.
- *Dick said he is interested to know how existing PAs will be integrated with PAs for waste sites that are not under DOE-ORP responsibility?* Moses said the site has been working to establish as much consistency in assessment documents as possible. Both DOE-ORP and DOE-RL are working hard to achieve a certain level of reasonable consistency.

Review of National Academy of Science (NAS) meeting and Nuclear Regulatory Commission (NRC) & ORP meeting

Al Boldt presented the committee with a review of comments he made to the NAS and NRC at public meetings about the classification of tank waste. Al indicated he made his comments as an individual, not a Board member. Although his comment letters to NAS and NRC were similar, his letter to the NAS put more emphasis on waste classification and the assessment of the difficulties with high-level waste (HLW) classification. He indicated the main issue he has with the classification of tank waste is that DOE and the NRC use two different definitions of HLW. DOE uses the definition of HLW in the Nuclear Waste Policy Act of 1982, which defines HLW as "the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations…that the Commission, consistent with existing law, determines by rule requires permanent isolation." The NRC uses the source-based definition of HLW from the 10 CFR Part 60.2. Al explained that Ecology has not currently been included in the DOE charter to reclassify waste. He said DOE does not have the authority to reclassify waste at Hanford. This issue remains an open issue, and has not been resolved.

Al said the NRC has identified four waste streams at Hanford in need of classification: 1)

Tanks and tank heel residuals; 2) Waste Treatment Plant (WTP) low-activity waste (LAW) logs; 3) Bulk vitrification containers; and 4) Secondary waste from the effluent container facility. Reclassifying waste as HLW depends on whether Ecology issues a disposal permit.

Al reviewed his concerns with the Hanford Solid Waste EIS, which he brought to Ecology in April of 2004. These concerns included DOE evaluation standards compared to the Environmental Protection Agency's Benchmark Maximum Contaminant Levels (MCLs), the appropriateness of the composite analysis, the I-129 Inventory, system mass balance modeling, the assumption of a cement waste form for secondary wastes, and non-conservative analysis. Al said his comments also discussed the possibility of using iron phosphate glass as a potential supplementary technology alternative for treating waste at Hanford.

Howard Gnann provided the committee with a letter describing an interagency agreement between the NRC and DOE-ORP for management of tank waste at the Hanford site. Roger Quintero explained that the interagency agreement requires DOE to consult with NRC for a technical review of SST retrieval actions.

Committee Discussion

- Suzanne Dahl, Ecology, said Ecology has recognized MCLs are important factors in waste classification. In IDF permits, there are a series of permit conditions that require waste summed together to not result in an impact that is within 75% of any environmental standard, with specific references to MCLs. This serves to say it is not acceptable to combine waste forms that would exceed (at the point of compliance) those standards.
- Dick said waste impact evaluations are dependent on the assumptions used. Suzanne said there is a risk budget tool used to determine the acceptability of the assumptions used to assess waste impacts.
- Al said DOE has indicated that installing a third melter would cost $100 million, and there is Board Advice stating that a third melter could be installed for the same price DOE is going to spend on research and development of supplemental bulk vitrification technology. Dick reminded the committee of a presentation given by Bill Hamel, DOE-ORP, that provided the reasons DOE does not believe iron phosphate is a good technology to use at Hanford. Dick does not believe DOE did an adequate review and evaluation of the capabilities of iron phosphate technology, and this should remain a viable supplemental technology. He suggested the bulk of the objections to iron phosphate technology are highly questionable.
- Paige agreed that DOE's previous presentation was not adequate. She suggested the committee develop a report on the issue, not just advice. *If iron phosphate is reconsidered, how can the committee and the Board receive a more adequate presentation of the technology?*

- Al emphasized his comment letters addressed waste classification issues. He said DOE has asserted a glass waste form is good, but it is more accurately the waste treatment system that is important, not just the glass. He indicated that Ecology is responsible for ensuring protection, because DOE is already taking the position that certain unclassified waste is LAW. Suzanne said that is the reason Ecology originally took issue with the Hanford Solid Waste EIS. She stated that Ecology would not allow waste that does not meet appropriate NRC standards for waste classification and disposal. She said waste has to meet PA assumptions and be protective of human health and environment. According to Suzanne, Ecology considers this to mean waste must be below MCLs.
- Harold expressed his hope that the committee was not suggesting a recommendation for a new treatment technology. He emphasized that changing processes now could undermine cleanup activities.
- Al said he would recommend DOE start developing plans to retrofit melters to produce iron phosphate glass. Suzanne said the project is in the middle of design, so there might be issues with incorporating iron phosphate melters into the design. She said it might be possible, but she has some concerns about the off-gas systems. She suggested that if off-gas flow changed due to a different melter system, DOE would end up having to redesign and reconstruct the off-gas systems. Al said he expected that argument, but suggested DOE would be able to figure out how to input waste into the melters to address changes in off-gas production.
- Al expressed concern with DOE's desire to move TPA milestone M62-08, which drives WTP construction to continue as scheduled, out until four bulk vitrification test runs can be completed. When the second plant is built, secondary treatment options would be chosen. Al commented that is the reason DOE should go ahead and build the vitrification plant as planned.
- Dirk commented about the possibility of impacts resulting from increased or decreased concentrations of moisture, contaminants, and gases produced on the retrofitted melters. Suzanne said a new risk assessment would have to be done if the decision is made to retrofit and redesign the WTP melters. Al indicated this is the cost that should be compared to the cost of developing the supplementary bulk vitrification technology.
- Dirk suggested the Board could request a cursory analysis be done of the major impacts and issues regarding retrofitted melters, to determine whether retrofitting the melters is a viable option that should be considered in efforts to meet M62-08. He emphasized the need to create robustness in the design of the facility, and suggested there may be enough built-in robustness to accommodate retrofitting the melters to produce iron phosphate glass.
- The committee agreed there is enough discussion potential on this item for a future meeting topic.

Bulk Vitrification Advice (joint committee meeting topic with BCC)

The Committee reviewed draft advice developed jointly between the TWC and the Budgets and Contracts Committee (BCC). The BCC agreed on draft advice principles during their October meeting. Billie Mauss, DOE-ORP, and John Kristofzski, CHG, provided an update on the most recent test melt, and discussed the history of developing the supplemental treatment decision options. In 2001, 24 technologies were evaluated. In 2003, the decision was made to move forward with three preferred technologies. They noted that DOE worked with Ecology to develop decision criteria. These decision criteria are: 1) Worker and public safety; 2) Environmental protection performance comparable to vitrification (i.e. "as-good-as-glass"); 3) Schedule acceleration; 4) Cost-effectiveness; 5) Operability; 6) System Interface Impacts (i.e. compatibility with other operations).

At the end of 2004, DOE evaluated three technologies based on the jointly-developed decision criteria, which led to the creation of a "green" selection chart. A range of tests was conducted on different scales (crucible, engineering, and full-scale melts), to evaluate the impacts of full-scale salting and thermal loading. The tests allowed for comparison of technologies. Based on the decision criteria, DOE evaluated bulk vitrification in comparison to the LAW facility. An independent cost evaluation was done with the data available at the time, to compare bulk vitrification and LAW.

In the interest of prioritizing the decision criteria to select the technology most appropriate for Hanford, DOE determined a comparison of the technologies should be based primarily on waste form qualification and ease of operability.

Billie and John described the current status of the testing of the demonstration bulk vitrification project. In March, a full-scale thermal box test melt (Test 38-A) failed due to a breach in the outer shell of the box. The most recent test (Test 38-A1), conducted in August, was successful, with no breach of the shell or hot spots. Billie and John indicated that future near-term activities include a full-scale melt on S-109 Simulant at the end of October and a Test Core Sampler in November. Corresponding design work is going to Ecology for review. The designs need to be completed and approved to develop a revised schedule and cost estimate for supplemental bulk vitrification.

Committee Discussion

- *If the disposal capacity needs are the same for secondary waste, Gerry asked what is the difference in volume? Why is bulk vitrification the favored supplemental technology for solid waste?* John clarified that the LAW vitrification facility is favored over bulk vitrification for secondary liquid waste. Suzanne said DOE and Ecology are trying to evaluate the options, focusing especially on comparing the land use of each option.
- *Paige asked how the cost of bulk vitrification is known?* Suzanne said it is currently unclear whether the original estimate of $582 million is still applicable.

- *Al asked if there is a point where the project would be transitioned to a budget line item?* Billie said DOE is managing tank farm work as a separate project, with a project-specific budget number. She explained that DOE's cost estimate for supplemental bulk vitrification includes everything from retrieval, constructions, decommissioning and disposal (D&D), melting, operation of plant, etc.
- *Dirk asked if detailed technical decision criteria exist to evaluate supplemental treatments technologies?* Billie referred the committee to Permit Attachment 1 for an updated table of estimates. Dirk said he considers those to be topics for criteria, not actual criteria. John said measurement criteria have been used to evaluate the supplemental treatment technologies.
- Dirk expressed concern that the melting process in bulk vitrification may involve metals, so sampling becomes a big issue. Dirk encouraged DOE and Ecology to be aware of any metals being released during the smelting operation. Suzanne said Ecology would not allow operation of the first "hot" box if the process were creating any metal slag.

Rick reminded the committee that the purpose of the discussion was to consider the draft advice principles and determine if consensus could be achieved in order to bring the advice to the Board. The committee discussed draft advice developed during the October BCC meeting. Gerry drafted the advice, and Susan Leckband provided edits. This piece of advice is to be developed and considered jointly between the TWC and BCC.

- Harold indicated he would oppose the advice unless it incorporates the language from the original advice, indicating the Board has supported the development of bulk vitrification technology in the past.
- Al expressed concern with including specific technical aspects of the waste product and not describing it as "as-good-as-glass."
- The committee discussed the cost estimate figures for the demonstration bulk vitrification project. Gerry commented that the draft advice refers to more than $150 million as the total bulk vitrification project cost. He said construction costs are unknown, and he has concerns about the budget figures. He said he wanted to make sure the $150 million figure was accurate. Billie indicated that $67 million of that figure is a combination of many activities. She said the requisition definition of what the demonstration project includes is retrieval, construction, and operations costs. Gerry suggested adding a parenthetical note or footnote into the advice about what DOE's cost estimate for the demonstration bulk vitrification project includes, as well as what the cost of the LAW vitrification plant includes. The committee agreed this is a suitable addition, and Gerry will draft the reference for incorporation into the draft advice.
- Dick expressed concern about including information on a specific percentage of the project cost that has already been spent. Dirk suggested re-wording the advice to remove references to specific numbers, percentages, and dollar amounts.
- Dick commented that capital costs are what they are and he is more interested in discussing the long-term operating costs and cost per unit volume for the demonstration bulk vitrification project.

- The committee discussed issues with comparing the cost of the demonstration bulk vitrification project and the full-scale facility operation costs of a project. Several committee members suggested the Board is concerned that the initial costs of the demonstration bulk vitrification project have increased to a point where they might equal or exceed the cost of a full-scale operating facility.
- The committee discussed the need to develop decision criteria to determine whether or not to continue financial support for the demonstration bulk vitrification project.
- Dick said he believes the Board's main concerns are the quality of the product, the cost of getting there, and any delays that may occur along the way.
- Al said language should be included that advises DOE to consider alternatives for enhanced capacity melters, including iron phosphate melters.
- *Dick asked what is expected to be compared under M62-08?* Suzanne explained that M62-08 says to compare supplemental treatment technologies and also compare them to an enhanced second LAW vitrification plant. In addition, she said an examination of the cost effectiveness or impacts of a melter enhancement made to WTP would be done. The report would look at the impacts of retrofitting the melters, which would require knowing the impacts of iron phosphate melters.
- Several committee members discussed the need for Ecology to provide an evaluation to prioritize between continued funding of the demonstration bulk vitrification project and funding further waste retrieval activities. Committee members asked what criteria Ecology has to prioritize funding decisions for supplemental treatment technologies? There was committee agreement to include language advising both DOE and Ecology to develop criteria, if none exist, to make a "go" or "no go" decision to continue funding the demonstration bulk vitrification project.
- The committee reached consensus on the principles of advice. Changes will be made and circulated to the committee before being brought to the November Board meeting.

Tank Closure Environmental Impact Statement (EIS) Alternatives

Mary Beth Burandt, DOE-ORP, presented the six alternatives evaluated in the Tank Closure EIS. None of the alternatives are TPA compliant, and only one alternative meets the 2028 milestone deadline, but only retrieves 90% of waste, not the required 99% under the milestone. She said it is important to determine the Board's values in terms of the importance of upholding existing deadlines or having the best waste product possible. She said the thing that swings the deadline date is the amount of available immobilized low-activity waste (ILAW) capacity.

Mary Beth discussed the main components of each of the six alternatives in the Tank Closure EIS:

- *Alternative 1* is the no action alternative, in which tanks continue to store waste with 100-year institutional controls and WTP construction is terminated in 2006.

- *Alternative 2A* represents the alternative the TWRS EIS analyzed. In this alternative, existing construction plans for the WTP would continue (two by two melter configuration) and treatment would begin on Jan 1, 2013 and end in 2087. There is no tank closure under this alternative.
- *Alternative 2B also* includes what the TWRS EIS analyzed with respect to treatment, it has an expanded WTP vitrification (two by six melter configuration), with treatment being completed in 2038. The SST system would experience landfill closure with 100-year institutional controls, and a barrier extended to cover six sets of adjacent cribs and trenches.
- *Alternative 3A* includes existing WTP vitrification (two by two melters) with supplemental bulk vitrification treatment. Treatment would be complete in 2034. The SST system would experience landfill closure and a barrier extended to cover six sets of adjacent cribs and trenches.
- *Alternative 3B* is the same as 3A and 3C, except for cast stone is used as the supplemental treatment option.
- *Alternative 3C* is the same as 3A and 3B, except steam reforming is used as supplemental waste treatment option.
- *Alternative 4* is focused on 99.9% waste retrieval. This alternative includes existing WTP capacity (two by two melter configuration), treatment completed in 2037, selective clean closure, meaning removal of some of the tanks and digging up the contaminated soil, and landfill closure for the balance of the SST system, a barrier extended to cover six sets of adjacent cribs and trenches, and 100-year institutional controls.
- *Alternative 5* meets TPA milestone commitments in terms of the date for treatment completion (2028), but only provides for retrieval of 90% waste rather than 99%, which is required by the TPA milestone. This alternative includes expanded WTP ILAW capacity (two by three melter configuration) and supplemental treatment, and assumes a January 2013 start date.
- *Alternative 6A* is focused on clean closure and digging up the tank farms. This alternative includes no separation of vitrified waste between ILAW and IHLW, all vitrified waste would be treated as high-level waste, treatment would be completed in 2157, clean closure of the entire SST system, landfill closure of the six sets of adjacent cribs and trenches, and 100-year institutional controls.
- *Alternative 6B* is similar to 6A, except there would be separation of vitrified waste between ILAW and IHLW, and treatment would be completed in 2038. Closure is completed by 2091.
- *Alternative 6C* is similar to 6B, except only landfill closure, rather than a combination of clean closure and landfill closure, is used for the SST system.

Committee Discussion

- *Paige asked if the alternatives in the Tank Closure EIS could be mixed and matched, or are they set?* Mary Beth said the existing alternatives are already a mix and match of the existing options. She said if a hybrid were picked between draft and final then DOE is committed to presenting the analysis for that hybrid in the final EIS.

- Dirk commented that digging up cribs and trenches and sending the contaminated material to a geologic repository would be good to add to Alternative 4.
- Rick suggested adding the melter configurations for each alternative to the diagrams to improve the overall understanding of the alternatives. Mary Beth said DOE Will relook at that as the suggestion has been made before.
- Paige suggested adding the term "capped" to the landfill closure alternatives.
- Al reiterated that none of these alternatives meet TPA milestone requirements or the purported goal of supplemental treatment, which was to enable waste treatment to be complete by 2028.
- *Dick asked if DOE ever contemplated the possibility of retrieving waste and storing it on-site for a long period of time, to let short-lived material decay, which would benefit overall clean closure?* Mary Beth said there are many other considerations that must be accounted for if a decision were ever made to store waste above ground. Generally, she said aboveground storage is not a good option. Dick suggested retrieving waste and processing it, but not closing the tank, which would be left in safe storage to let short-lived material decay.
- *Returning to the SST PA, Stan Sobazyk asked which alternative the PA would evaluate?* Mary Beth said Alternative 2B is the closest alternative being evaluated by the PA.

The committee discussed priorities coming from the issue manger workshop.

- Al expressed concern about the focus on the 2028 milestone deadline date. Suzanne stated that just because certain alternatives appear in the EIS, which does not mean those scenarios are what will actually happen. She said if Ecology decided the 2028 deadline was of paramount importance, they would require DOE to adjust treatment to achieve that deadline.
- Gerry said DOE has made a statement that they are not considering 90% retrieval as an option, but are required by DOE-HQ to include it in the EIS. He said he does not believe it is required, and is actually an illegal option to propose. He believes this represents a challenge to the Cleanup Priority Act, and there is no adequate explanation for including an illegal alternative in the EIS.
- Al said the Board has to be realistic, to recognize DOE is not going to meet the 2028 deadline. Considering this reality, the Board should consider its position and most important principles, to advise the TPA agencies as they enter into a renegotiation of the milestone. He believes the Board should be proactive.
- John said DOE would like to be done by 2028, but prefers to have a closure scenario that is as clean as technically possible.
- Paige commented that the TPA is the Board's "Bible." She agrees with Gerry that the Tank Closure EIS alternatives look like an attempt by DOE-HQ to undermine the TPA. However, she believes the Board does not want to be accusatory. She stated that the quality of the cleanup and safety are of first and foremost importance. She emphasized, however, that she does not want the Board to appear soft on a milestone deadline. Suzanne reminded the committee that the TPA has two parts: deadlines and

requirements. She said Ecology has enforced them from both angles. She told the committee that it is unlikely Ecology will say the 2028 deadline is important to them. She explained that when something happens where Ecology decides to take an enforcement position, they would do so because DOE is not meeting an obligation. She said if DOE does not meet the deadline, that default on a TPA milestone would come up in depositions.

- Al believes DOE has not tried hard enough to meet the 2028 deadline. He commented that DOE does not really want to show they can meet the 2028 deadline, because then they would have to meet it.
- Gerry said it is important to send a message to Ecology advising them not to relax the 2028 milestone. He said the TPA agencies need to acknowledge that the milestone deadline was set for a reason, and DOE mismanagement caused them to be unable to meet the deadline. In addition, Gerry emphasized his belief that the Board needs to continue stating that Alternative 5 does not meet TPA requirements. Al added that Alternative 5 indicates the deadline is more important than the quality of the waste product. Suzanne said she has heard DOE-HQ say the only way to meet TPA milestones is to leave waste in the tanks. She expects this will likely continue to be their position. She commented that DOE-HQ might be trying to cover themselves from a National Environmental Protection Act (NEPA) standpoint, since there are some tanks that DOE knows they will only be able to get a certain amount of waste out of.
- Rick said there have to be combinations of options in the EIS alternatives that meet TPA requirements. *He asked whether the Board can issue advice that would impact the draft EIS?* Gerry said the Board could say the current scope of the EIS is not appropriate. Suzanne said there are some combinations of options that may involve changing the facilities configuration. If DOE decides to do things a little cheaper and take a little longer, those options should be evaluated.
- Gerry said closure options should not be linked with bulk vitrification options. He would rather be able to choose a treatment option and a closure option from any of the alternatives in the EIS. Dirk indicated that from what DOE described during the workshop, they could provide options that way. So, he proposed developing a matrix to depict the suite of different combinations.
- Todd expressed concern that the 2028 deadline is an important milestone, which the Board needs to support, but not to the point that the Board is too inflexible to allow a change that would benefit cleanup activities overall. He reminded the committee that the Board has already issued Advice #164, which tells DOE all their alternatives are not TPA compliant and that they need to have at least one alternative that complies with TPA requirements for treatment and removal. He said the responses from DOE-ORP indicate they think the alternatives in the EIS are consistent with TPA requirements. He commented that it might be best for the Board to remain silent on issue for now.
- Al asked how Ecology would respond if DOE issues the EIS and none of the alternatives can be selected, and thus a ROD cannot be issued? Suzanne said DOE does not make the decisions alone. A ROD requires a decision to be made that is

reflective of the TPA requirements. Dick said a ROD does not have to choose one of the alternatives in the EIS.

- *Al asked if Ecology could accept an EIS that contains no TPA compliant alternatives?* Suzanne said Ecology could accept portions of such an EIS. There are certain parts of the analysis that can help inform other decisions. She explained that an EIS is hardly ever accepted in its entirety, but select portions allow Ecology to make SEPA analysis decisions.
- The committee decided to wait to issue further advice on the Tank Closure EIS, but will continue to track the issue.

Committee Business

The committee discussed some next steps:

- The committee will request a presentation from DOE on tank volume projections between 2009 and 2015 and tank waste volume budget projections. This will be a topic for a committee meeting in January.
- The committee will wait to issue potential advice on the Tank Closure EIS.
- The committee will request a PA and document process issue manager workshop or portion of a committee meeting.
- Modeling issues with groundwater and lateral transport:
    - Dirk will follow-up on the topic with appropriate DOE-ORP representatives.
    - Independent technical assessment review scope of work.
        - Would evaluate the Tank Closure EIS for comparison with the Solid Waste modeling.
            - Todd said this topic is on a one-year rolling horizon.
        - The committee agreed to revisit the scope of work for the technical review.
        - The committee will arrange a committee call to discuss the topic.
- The committee agreed to postpone the THORP Conduct of Operations presentation and discussion for a committee meeting in January.
- The committee would like to receive a DST presentation from Jeff Lyon.
- Iron phosphate presentation on the impacts of high-level plant modifications (assuming it was possible):
    - Al Boldt agreed to take the issue manager lead on the topic.
    - DOE-ORP says they have not changed their position on the topic, so the presentation would be the same as was previously given to the committee.
        - DOE-ORP would require specific questions from committee members before they could commit to supporting an agenda item on this topic.
        - Dirk and Al agreed to develop some questions from the committee.
- The committee agreed to have a committee call on Monday, October 17.

Handouts

NOTE: Copies of meeting handouts can be obtained through the Hanford Advisory Board Administrator at (509) 942-1906, or tholm@enviroissues.com

- Hanford Tank Farm Performance Assessments, Steve Wiegman, DOE-ORP, Tony Knepp, CHG, and Fred Mann, CHG, October 2005.
- Supplemental Treatment Decisions, Billie Mauss, DOE-ORP, and John Kristofzski, CHG, October 13, 2005.
- Draft Advice on the Bulk Vitrification Demonstration Project, BCC committee, October 12, 2005.
- Letter describing the Interagency Agreement between the U.S. Department of Energy (DOE) Office of River Protection (ORP) and the Nuclear Regulatory Commission (NRC) for Management of Tank Waste at the Hanford Site, Roy Schepens, DOE-ORP, August 20, 2005.
- Tank Closure EIS Alternatives, Mary Beth Burandt, October 13, 2005.
- Permit Attachment 1: Section 1.0 of the Permit Application, DOE-ORP, May 2004.

Attendees

HAB Members and Alternates

Al Boldt	Bob Parks	
Dirk Dunning	Gerry Pollet	
Harold Heacock	Wade Riggsbee	
Rick Jansons	Dick Smith	
Paige Knight	Stan Sobazyk	
Todd Martin (by phone)	John Stanfill	

Others

Dana Bryson, DOE-ORP	Suzanne Dahl, Ecology	Suzanne Heaston, BNI
Mary Beth Burandt, DOE-ORP	Jeff Lyon, Ecology	Moses Jaraysi, CHG
Tony Knepp, DOE-ORP		Tony Knepp, CHG
Billie Mauss, DOE-ORP		Fred Mann, CHG
Erik Olds, DOE-ORP		Nancy Peters, CHG
Roger Quintero, DOE-ORP		Cathy McCague, EnviroIssues
Zack Smith, DOE-ORP		Jason Mulvihill-Kuntz, EnviroIssues
		Kim Ballinger, Nuvotec/ORP
		Sharon Braswell, Nuvotec/ORP